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Report of the Expert Group on the Integration of Statistical and Geospatial Information

Note by the Secretary-General

In accordance with Economic and Social Council decision 2016/220 and past practices, the Secretary-General has the honour to transmit the report of the Expert Group on the Integration of Statistical and Geospatial Information. In its report, the Expert Group details its recent activities and informs the Statistical Commission about the global consultation on the global statistical geospatial framework and the subsequent adoption of the framework's five guiding principles by the United Nations Committee of Experts on Global Geospatial Information Management at its sixth session, in August 2016. The global statistical geospatial framework will be presented to the Statistical Commission as a background document. The Commission is invited to take note of the progress of work in the development of the global statistical geospatial framework and the international consultation that has taken place in this regard, to endorse the five guiding principles of the framework and to provide comments on the Expert Group's progress in its consolidation and implementation of the global statistical geospatial framework.

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Report of the Expert Group on the Integration of Statistical and Geospatial Information

I. Introduction

1. Pursuant to Statistical Commission decision 44/101, in 2013 the Statistics Division of the Department of Economic and Social Affairs of the Secretariat established the Expert Group on the Integration of Statistical and Geospatial Information, which comprises representatives of both the statistical and the geospatial professional communities of Member States. The Expert Group determined its modalities and programme of work and has, since its establishment, reported to both the Statistical Commission and the Committee of Experts on Global Geospatial Information Management at each of their respective annual sessions.

2. The overall objectives and functions of the Expert Group, as stated in its terms of reference, (see E/CN.3/2014/31 and Corr.1, annex III) are to pursue the implementation of the statistical geospatial framework in the 2020 round of censuses, with the understanding that it would apply to other initiatives, including other censuses, such as agriculture censuses and economic censuses, and global initiatives, such as the post-2015 development agenda and "big data". To achieve this, the Expert Group was tasked with evaluating the statistical geospatial framework developed by the Australian Bureau of Statistics (ABS) and determining if and how this could be internationalized.

3. In the present report, the Expert Group summarizes the activities it has undertaken since the forty-seventh session of the Commission, including the main outcomes of its third meeting, held in Paris in April 2016, and the global consultation on the proposal for a global statistical geospatial framework, as well as the adoption by the Committee of Experts on Global Geospatial Information Management at its sixth session, in August 2016, of the five guiding principles as the foundation of the global statistical geospatial framework. The Commission is invited to take note of the progress of work in the development of the global statistical geospatial framework and the international consultation that has taken place in this regard, to endorse the five guiding principles of the framework and to provide comments on the Expert Group's progress in its consolidation and implementation of the global statistical geospatial framework.

II. Third meeting of the Expert Group on the Integration of Statistical and Geospatial Information

4. The third meeting of the Expert Group was held in Paris on 25 and 26 April 2016 in conjunction with the sixty-fourth plenary session of the Conference of European Statisticians. The aim of the meeting was: (a) to review the outcomes of the Working Group's internal consultation on the proposal for a global statistical geospatial framework; (b) to focus on the prioritization of topics of the Expert Group's future work program; (c) to discuss ways of coordinating activity on the modernization and interoperability of standards; and (d) to discuss other integration of activities related to statistical and geospatial information. The meeting was

attended by 22 participants from 14 countries (Australia, Brazil, Finland, France, Germany, Mexico, Morocco, New Zealand, Norway, Poland, Qatar, Sweden, United Kingdom of Great Britain and Northern Ireland and United States of America) and 7 regional and international organizations (Economic Commission for Europe, Economic Commission for Africa, Eurostat/European Commission, Organization for Economic Cooperation and Development, ISO/TC 211, JMStat and the Statistics Division).

5. The Expert Group discussed in detail the proposal for a global statistical geospatial framework and issues raised during its consultations in preparation for a planned global consultation later in 2016. Six key issues were identified, summarized as follows:

(a) **The expectation that the global statistical geospatial framework should be a standard**. The global statistical geospatial framework is a principles-based framework, not a statistical or technical standard. However, the Expert Group agreed that where the word standard was used in the proposal it was in reference to the technical standards that underpin the principles of the framework. The principles are naturally aligned to standards and standardization, such as those relating to data and metadata interoperability, as well as the ISO-9100 series of geographic information standards;

(b) **Concerns that "location references" and "geocoding" are too focused on address, which is not applicable to some developing countries**. The Expert Group considered and agreed with suggestions that location references be broadened to other location descriptors, including enumeration geographies. Addresses or property were preferred, wherever applicable or attainable. The Group strongly encouraged developing countries to geocode a point if address or property was not attainable or applicable. The Expert Group also encouraged Member States to test point-referencing (such as latitude and longitude) or some form of proxy, such as a centroid of a polygon or a telephone tower, especially in rural areas;

(c) **The scope of the global statistical geospatial framework and whether it needs to be extended to environmental data**. The Expert Group discussed feedback from its consultation and noted that the framework was currently limited to socioeconomic data and excluded environmental statistics. The framework does not presently account for these types of data, particularly considering that there are differing types of environmental data. The Group preferred to be as data-inclusive as possible and was of the view that the framework should be flexible in order to promote and enhance geo-referencing for all statistical data. The Expert Group agreed to try and offer practical geo-referencing approaches, particularly for Member States that were not considering data beyond traditional official statistical sources;

(d) **Use of the term "fundamental data" in place of the term "authoritative data"**. The Expert Group agreed to the change to reflect the need to access the most current and up-to-date data and align terminology with similar data terminology of the Committee of Experts;

(e) **Identification of new data sources as an area that could benefit from the global statistical geospatial framework**. The Expert Group agreed to consider new data sources and encouraged the sharing of examples and good practices on

mobile computing technology and data, as well as other new and emerging data sources;

(f) **Inclusion of open data policies and principles**. The Expert Group agreed to include references to international principles and/or agreed national policies on open data.

6. Other issues were also raised in the consultation process for consideration in the future work programme of the Expert Group. These issues were not discussed in any depth and are to be considered at future meetings of the Expert Group. They included the following:

(a) Develop methods to track changes over time for geometries (raised by Germany);

(b) Define data assets in a "service-oriented architecture" construct (raised by the United States);

(c) Develop "channel management standards" (raised by the United States);

(d) Develop best practices for maintaining data over time (raised by the United States);

(e) Work towards establishing the global statistical geospatial framework into a formal standard (raised by New Zealand);

(f) Agree to a system of unique identifiers for all geospatial features, including an appropriate time and version control mechanism (raised by Eurostat);

(g) Promote favourable access and use conditions for geospatial data relevant to geocoding and use within the context of framework purposes (raised by Eurostat);

(h) Work to harmonize the geographic and geospatial objects used by the statistical and geospatial communities as their geographic reference framework (raised by Poland).

7. At the meeting, presentations were made on the Sustainable Development Goals, geospatial information and a global framework and on the United Nations Global Working Group on Big Data for Official Statistics and links to the global framework. Both presentations provided an opportunity for the Expert Group to discuss and consider the best way to contribute to the global indicator framework for the Sustainable Development Goals and big data, as well as to link the global statistical geospatial framework to these initiatives. The Expert Group sought to have a member of the Expert Group represented on the newly established Working Group on Geospatial Information of the Inter-Agency and Expert Group on the Sustainable Development Goals Indicators, the Task Team on Satellite Imagery and Geospatial Data, the United Nations Global Working Group on Big Data for Official Statistics and the Expert Group on Land Administration and Management. In addition, the Expert Group agreed to contribute to and align with the System of Environmental Economic Accounting.

8. The Expert Group discussed the way forward for the global statistical geospatial framework, with emphasis on how to contribute to the global indicator

framework. The Expert Group agreed that, for each of the five principles of the global statistical geospatial framework, there is the need:

(a) To collect national-level examples of practices, policies, guidelines, standards and cases of use;

(b) To collect regional and global practices and standards, where they exist;

(c) To collect examples of obstacles faced in implementing the principles and how they have been overcome;

(d) To publish this information through the web page of the Expert Group.

9. The Expert Group discussed its composition and terms of office and agreed on two co-Chairs, each to serve for a period of three years, renewable for an additional period of three years. The current term of the co-Chairs will end in November 2016, and the proposal is to retain the current co-Chairs for another three-year term, as this would be helpful to steer the discussion and consultation on the global statistical geospatial framework towards its endorsement by both the Committee of Experts on Global Geospatial Information Management and the Statistical Commission. The Expert Group affirmed the continuation of its existing work programme and reviewed its mandate, amending it slightly as follows:

(a) To provide a forum for coordination of the statistical and geospatial communities, with a view to developing a global statistical geospatial framework for the integration of statistical and geospatial data;

(b) To propose workplans and guidelines to advance the implementation of the global statistical geospatial framework to increase information to support social, economic and environmental policy decision-making;

(c) To address various technical, institutional and information policy issues related to implementation of the global statistical geospatial framework, especially issues of confidentiality;

(d) To pursue implementation of the global statistical geospatial framework in the 2020 round of censuses, with an understanding that it will apply to other initiatives (other censuses) and global initiatives such as the global indicator framework and big data.

III. Proposal for a global statistical geospatial framework

10. At its second meeting, held on 24 May 2015 in Lisbon, the Expert Group discussed options to prepare a global statistical geospatial framework for endorsement. The Australian Statistical Spatial Framework, the European Generic Statistical Business Process Model and Mexico's National Geostatistical Framework model were introduced and discussed as three variants of a possible framework. The Expert Group agreed on a work programme to prepare a global statistical geospatial framework incorporating aspects of the three models. The Australian Bureau of Statistics (ABS) agreed to undertake this work programme and bring forward a proposal for a global statistical geospatial framework through the Expert Group.

11. The Expert Group circulated its first draft proposal to its members for consultation in December 2015. An advance draft of the framework proposal was then provided to the Statistical Commission at its forty-seventh session, in March 2016, as a background document. At its third meeting, the Expert Group reviewed and further consolidated the proposal and readied it for global consultation. The Statistics Division agreed it would then undertake a global consultation with the statistical and geospatial professional communities, with the intent of submitting a global statistical geospatial framework to the Committee of Experts on Global Geospatial Information Management and the Statistical Commission in 2016 for endorsement.

12. In May 2016, the Statistics Division conducted the global consultation on the proposed global statistical geospatial framework, involving both the statistical and the geospatial communities. The Division received an encouraging number of responses (in excess of 58), ranging from full support to support with comments, recommendations and adjustments. There was consensus on the five guiding principles that anchor the framework. The five guiding principles are:

(a) Principle 1: use of fundamental geospatial infrastructure and geocoding;

(b) Principle 2: geocoded unit record data in a data management environment;

(c) Principle 3: common geographies for dissemination of statistics;

(d) Principle 4: interoperable data and metadata standards;

(e) Principle 5: accessible and usable geospatially enabled statistics.

13. Thereafter, the global statistical geospatial framework was revised by the Expert Group to capture, to the extent possible given the very short time frame, the comments and adjustments from the global consultation. The framework was then submitted to the Committee of Experts at its sixth session and the Statistical Commission at its forty-eighth session for endorsement. It also sought to clarify future plans for the consolidation of materials that would support the global statistical geospatial framework and promote and support its implementation in global initiatives such as the global indicator framework for the Sustainable Development Goals and the 2020 round of population and housing censuses.

IV. Sixth session of the Committee of Experts on Global Geospatial Information Management

14. At its sixth session, convened in New York in August 2016, the Committee of Experts on Global Geospatial Information Management congratulated the Expert Group on the significant progress achieved, in particular with respect to the global consultation on the global statistical geospatial framework, which produced a substantial number of responses from both the geospatial and the statistical communities. The Committee also reiterated that the 2030 Agenda for Sustainable Development and the 2020 round of population and housing censuses were important drivers for the integration of geospatial and statistical information in support of evidence-based decision-making across many sectors, whether public or private, at the national and global levels, and for increased institutional coordination

and cooperation between the geospatial and statistical agencies and other stakeholders.

15. With its decision 6/107 (see E/2016/46, chap. I, sect. B) the Committee of Experts adopted the five guiding principles, as referenced in the report of the Expert Group (see E/C.20/2016/9), as the foundation of the global statistical geospatial framework, and looked forward to progress on the framework being reported to both the Statistical Commission and the Committee of Experts for further consideration and adoption at their next sessions in 2017.

16. The Committee of Experts also agreed to the amended terms of reference of the Expert Group with regard to its composition and terms of office and to the proposal to retain the current Co-Chairs for an additional three-year term.

V. Conclusion and the way forward

17. In its decision 6/107, the Committee of Experts on Global Geospatial Information Management recognized the importance of the continuing work of the Expert Group, with a focus on consolidation and implementation of the global statistical geospatial framework, and, with respect to implementation, encouraged the Expert Group to focus on capability-building, knowledge management and sharing of good practices, for example, use of technological tools, and, with respect to consolidation, strongly encouraged the Expert Group to build on the work done by other bodies at the global and regional levels and to enable them in turn to build on the work of the Expert Group.

18. The principles of the global statistical geospatial framework are high-level and flexible enough that they can be adapted and applied to a wide variety of country or regional contexts. Because the principles have been kept broad, they can be applied to local circumstances, while still providing encouragement for the use of international standards and methods. Countries such as Australia, Egypt, Mexico, New Zealand and the United Arab Emirates have produced similar frameworks for their use nationally. With this in mind, at the third meeting of the Expert Group, in April 2016, members agreed to prepare country-level examples detailing their application of the global statistical geospatial framework principles in preparation for broader global community input. A template for country examples for each of the five principles has been prepared by the Australian Bureau of Statistics and is presently being tested and validated by the Expert Group. This template will be distributed globally in the near future and will contribute to knowledge management and the sharing of good practices.

19. Through the efforts of the Expert Group, the Committee of Experts is continuing to work with the Statistical Commission to carry out the important work on developing a global statistical geospatial framework as a globally consistent mechanism for enabling the integration of statistical and geospatial information. The work represents a step towards establishing a global information infrastructure for integrating multiple data sources, including big data, with an explicit geospatial reference framework that is in keeping with the needs of the global community and development agendas.

20. The importance of these efforts was recognized and validated by the Economic and Social Council when, in adopting resolution 2016/27 on strengthening institutional arrangements on geospatial information management, the Council acknowledged the importance of strengthening capacity-building in the area of geospatial information management and relevant statistical integration, especially in developing countries. Noting the increasing role and relevance of the Committee of Experts, the Council requested that the Committee report back to it, no later than in five years' time, on the implementation of the resolution as well as on its continued efforts to work with the Statistical Commission to integrate geospatial and statistical information systems.

21. The global statistical geospatial framework has been provided to the Commission as a background document to the present report.[1] The Statistical Commission is invited to take note of the progress of work in the development of the global statistical geospatial framework and the international consultation that has taken place in that regard, to endorse the five guiding principles of the framework and to provide comments on the Expert Group's progress in its consolidation and implementation of the global statistical geospatial framework.

VI. Points for discussion

22. **The Commission is invited:**

(a) **To take note of the report and the progress of work of the Expert Group on the Integration of Statistical and Geospatial Information;**

(b) **To express its views on the progress of the global statistical geospatial framework and endorse the five guiding principles as adopted by the Committee of Experts on Global Geospatial Information Management as the foundation of the global statistical geospatial framework;**

(c) **To provide comments on the Expert Group's progress in its consolidation and implementation of the global statistical geospatial framework.**

[1] Available from http://ggim.un.org/docs/meetings/GGIM6/Background-Paper-Proposal-for-a-global-statistical-geospatial-framework.pdf.